



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

LDGM-354/B

Date: August 8, 1989

In reply refer to: M-89-66 and -67

Mr. H. R. MacLeod
Chairman
Lloyd's Register of Shipping
71 Fenchurch Street
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About 2325 on March 15, 1988, a fire occurred in the engineroom of the Bahamian flag passenger vessel SCANDINAVIAN STAR. At the time of the fire, the ship was about 50 nmi northeast of Cancun, Mexico, en route from Cozumel, Mexico, to St. Petersburg, Florida, with 439 passengers and 268 crewmembers on board. The master broadcast a distress message and ordered the evacuation of passengers to the four muster stations on the ship. The loss of main generator and emergency generator electrical power and the malfunction of the ship's fixed CO₂ firefighting system hindered efforts to fight the fire. The inability of crewmembers to communicate with each other and with passengers created confusion during the firefighting and evacuation activities. Two crewmembers received minor injuries during the emergency. Two passengers were medivaced from the vessel and flown to a hospital in St. Petersburg, Florida, where they were treated and later released. Damage and repair costs were estimated at \$3.5 million.¹

During construction of the SCANDINAVIAN STAR, the ship was equipped with a fixed CO₂ fire suppression system which consisted of 36 45-kilogram bottles of CO₂ located on the Sun Deck. By positioning the valves on the distribution manifold at the emergency control cabinet located on the port side "C" Deck passageway, the CO₂ could be directed to the desired machinery space compartment. After the staff engineer eventually closed the fuel oil tank valves and shut down the engineroom fuel pumps and ventilation fans from the remote emergency control cabinets, the decision was made to release the CO₂ into the engineroom. However, when the staff engineer activated the automatic release from the remote control cabinet, the CO₂ did not release. Because the remote controls did not release the CO₂, it was necessary for

¹For more detailed information, read Marine Accident Report--"Fire On Board the Bahamian Passenger Ship the SCANDINAVIAN STAR in the Gulf of Mexico, March 15, 1988" (NTSB/MAR-89/04).

the staff engineer to run up five decks to enter the CO₂ storage room on the Sun Deck. However, because the four local automatic releases at the end of each of the four rows also malfunctioned due to the limited travel allowed by the CO₂ operating cylinders, it was necessary for the staff engineer to climb on top of the rows and release each bottle manually. Valuable time was lost in the attempt to release the CO₂, and the malfunction of the remote automatic and the local automatic release mechanisms on the fixed CO₂ fire extinguishing system contributed to the duration of the fire and increased the danger to passengers and crewmembers.

The Safety Board is concerned that the primary system to fight an engineroom fire did not function as intended. The Safety Board is further concerned that the servicing and testing by a CO₂ service contractor in December 1987 detected no problems with the system and that the annual surveys conducted by the classification societies, Bureau Veritas and Lloyd's Register of Shipping, did not include a detailed inspection of the remote and manual automatic release mechanisms.

The fire destroyed the electrical cables overhead in the engineroom, and, according to both the bridge and engineroom log books, about 15 minutes after the fire started, all main and emergency generator electrical power was lost. At that time, the only source of power on board the ship was from the emergency battery, which came on line as designed supplying only limited lighting to passageways, stairwells, engineroom and bridge control stations, and lifeboat embarkation stations. Since the emergency battery system did not include electrical power to the public address system, the master was unable to communicate with either the various emergency response groups or the passengers via the public address system for a 1-hour period while the emergency generator was being repaired. Also, since the battery supply system could not include electrical power to any of the four fire pumps, the only resource available to the Mobile Fire Group to cool hot spots discovered was by using the water supply from the ship's swimming pool.

The investigation revealed that the electrical power supply for the emergency generator did not comply with International Maritime Organization (IMO) or Coast Guard regulations that require the emergency generator be independent and separated as far as practical from the main machinery spaces to ensure that "a fire or other casualty in spaces containing the main source of electrical power...will not interfere with the supply, control, and distribution of the emergency electrical power." Testimony by the chief electrician and engineering officers revealed, however, that the battery bank which supplied power to excite the magnetic field in the emergency generator was located in the main engineroom. While the Safety Board is concerned that the power source for the emergency generator was located in the main engineroom and believes that SeaEscape should take action to correct the situation in accordance with IMO regulations, the Safety Board is equally concerned that the situation was not detected during the scheduled classification surveys conducted by Lloyd's Register of Shipping.

Therefore, the National Transportation Safety Board recommends that Lloyd's Register of Shipping:

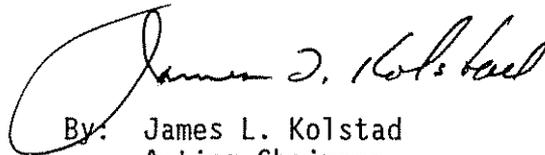
Amend survey procedures for the fixed CO₂ fire extinguishing systems on passenger vessels to include a more detailed inspection of the remote and local automatic release mechanisms to verify their operation and the operation of the entire system. (Class II, Priority Action) (M-89-66)

Amend survey procedures for the emergency generator on passenger vessels to require verification that the emergency generator is independent and not reliant on a power source from the main engine room. (Class II, Priority Action) (M-89-67)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "... to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any action taken as a result of its safety recommendations. Therefore, it would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations M-89-66 and -67 in your reply.

Also, the Safety Board issued Safety Recommendations M-89-43 through -51 to the U.S. Coast Guard; M-89-52 through -65 to SeaEscape; and M-89-68 to Bureau Veritas.

KOLSTAD, Acting Chairman, and BURNETT, LAUBER, NALL, and DICKINSON, Members, concurred in these recommendations.


By: James L. Kolstad
Acting Chairman